



Status of FPIX Production

A.Hahn



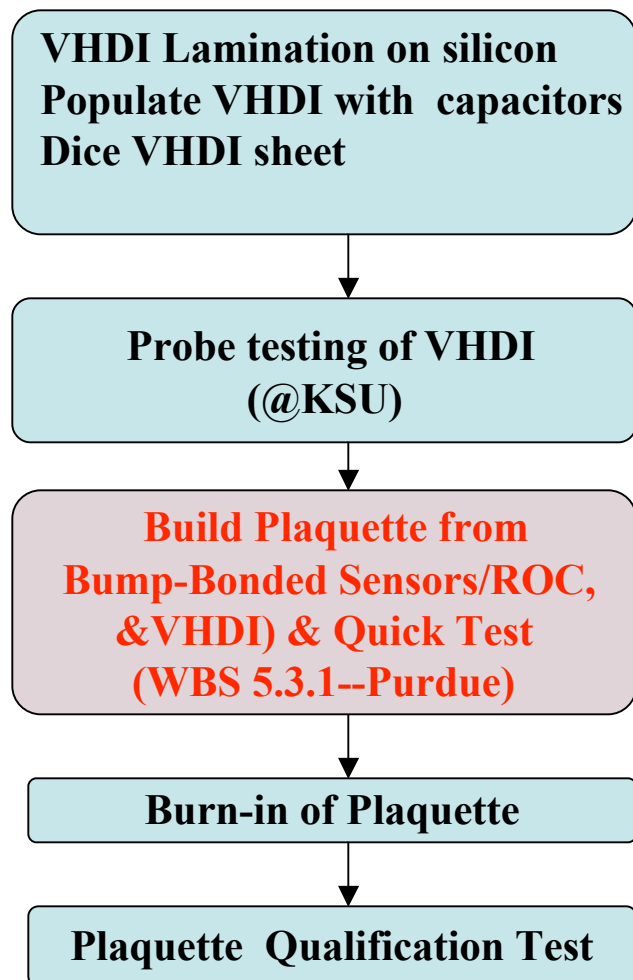
Outline

- Flow Chart of Detector Assembly
- Detector Assembly Status
 - VHDI
 - Plaquette/Panel Testing- see M.Eads talk, this session
 - Panels- see R. Vasquez talk, this session
 - Half-Disk Assembly
 - Final Assembly
- Summary

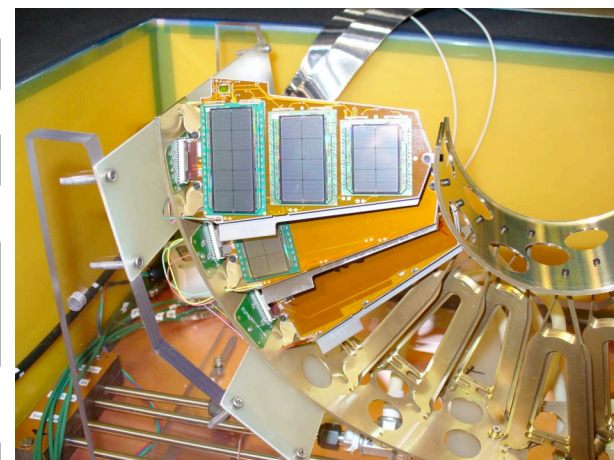
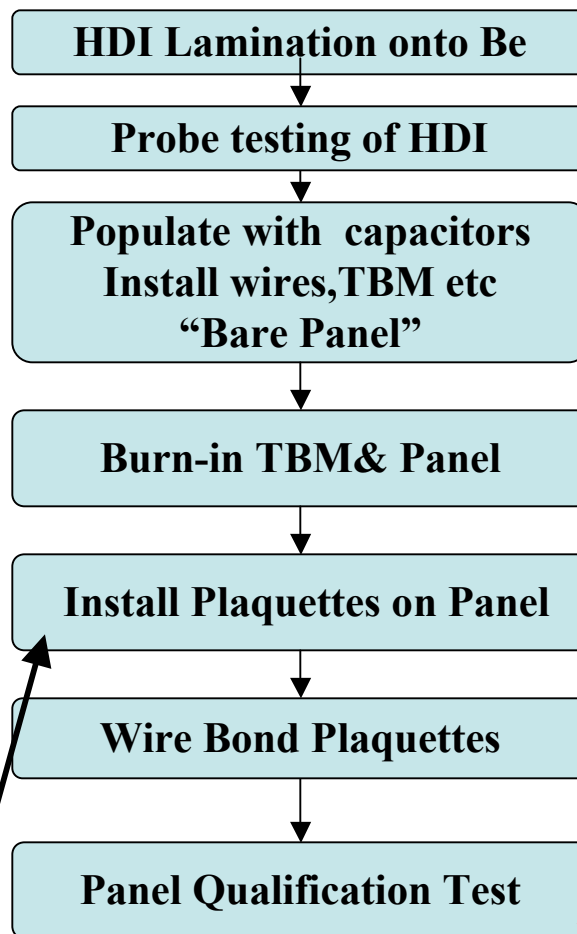


Flow Chart of Production Assembly

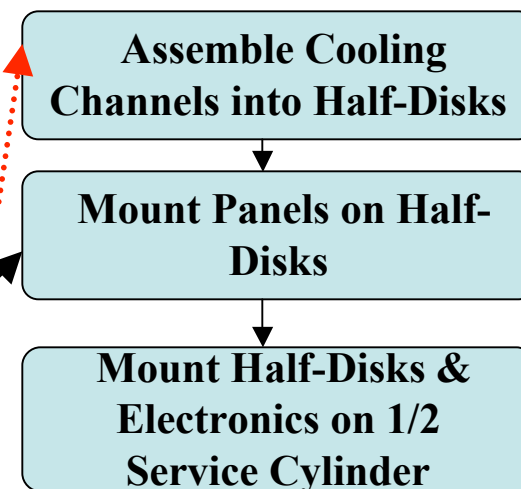
Plaque Production



Panel Production



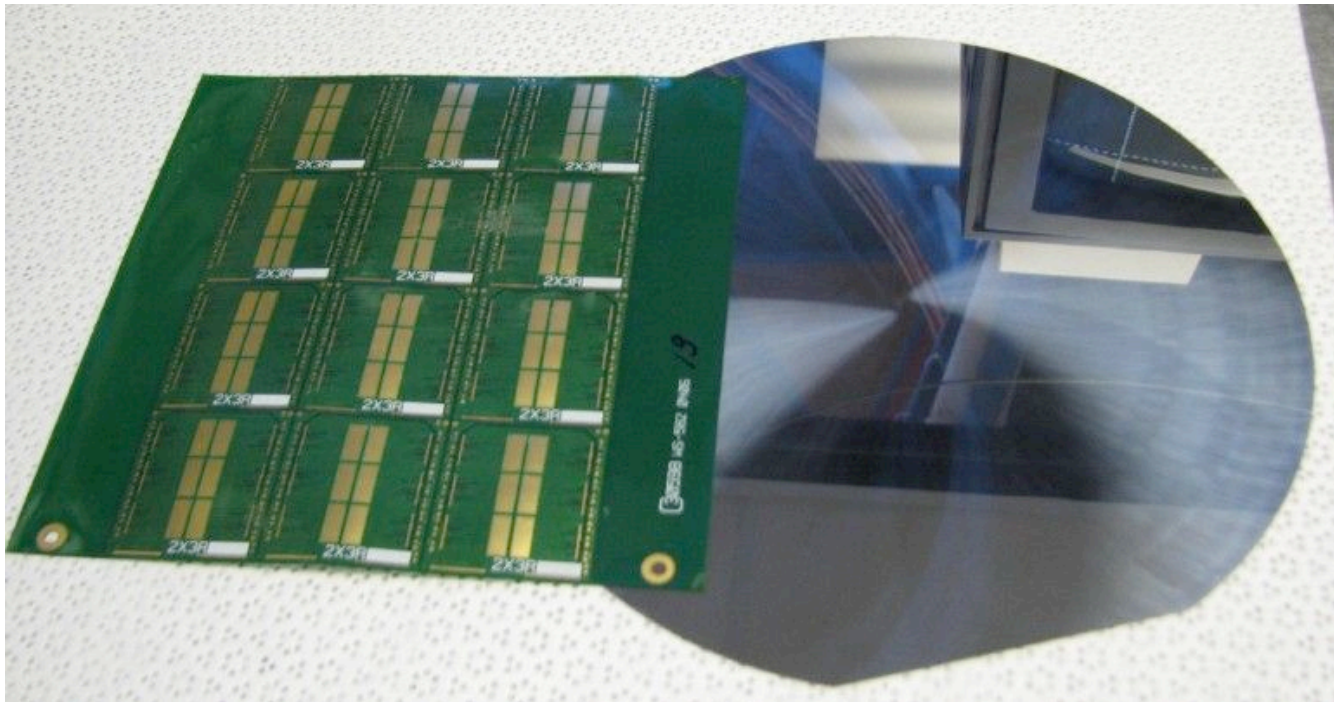
Final Detector Assembly



We are up to here with production parts



VHDI Production



- Flex circuit laminated to 300 μ Si Wafer with 3M9882 (50 μ thick) Thermally Conductive Adhesive Tape
- Probe Tested at KSU for electrical faults



VHDI Production Status

| VHDI Ttype | Shipped to KSU | Needed (25%spare) | KSU Good | KSU Bad | Total KSU Tested | Remaining Shipped to be tested | %tested/ship ped |
|--------------------------|----------------|----------------------|-------------|------------|---------------------|--------------------------------------|---------------------|
| 1x2L | 63 | 60 | 37 | 1 | 38 | 25 | 0.60 |
| 1x2R | 87 | 60 | 63 | 8 | 71 | 16 | 0.82 |
| 1x5L | 57 | 60 | 51 | 4 | 55 | 2 | 0.96 |
| 1x5R | 79 | 60 | 53 | 2 | 55 | 24 | 0.70 |
| 2x3 | 310 | 240 | 155 | 23 | 178 | 132 | 0.57 |
| 2x4 | 287 | 240 | 166 | 21 | 187 | 100 | 0.65 |
| 2x5 | 182 | 120 | 114 | 10 | 124 | 58 | 0.68 |
| Plaquelette Total | 1065 | 840 | 639 | 69 | 708 | 357 | 0.66 |
| ROC Equivale | 6956 | 5400 | 4118 | 454 | 4572 | 2384 | 0.66 |

last updated
9/1/06

- Using KSU Probe Testing Yields, we will need to order a few more sheets of VHDI's to cover our entire plaquelette production needs.
- ok for now



Production Plaquette Testing

(FNAL, NU, UNL, UVa, Purdue-Calumet, SUNY-Buffalo)

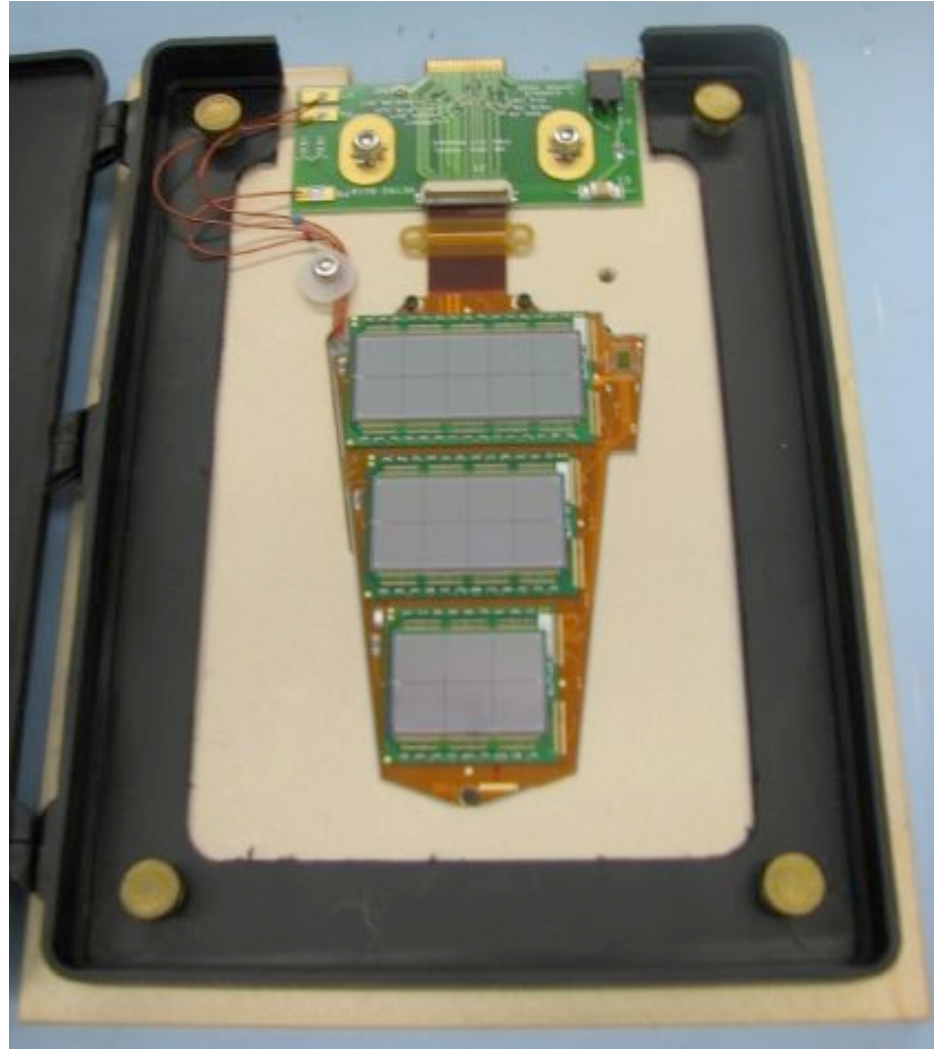
- Plaquettes arrive from Purdue
 - where they have already passed a quick functionality test
 - “Very Quick Test” as they are unpacked
- Immediately go to Burn-In Test (2 days)
 - After loading is finished:
 - Temperature is cycled a 10 times between 20°C and -15°C.
 - Modest testing
 - multiplex through all 20 plaquettes, simply counting ultra-blacks, perhaps an occasional pixel-alive test.
 - Will note time if a plaquette fails
- All plaquettes which have not obviously failed during the burn-in then undergo a Full Plaquette Characterization Test
- See talk by M.Eads, this session



Panel Production

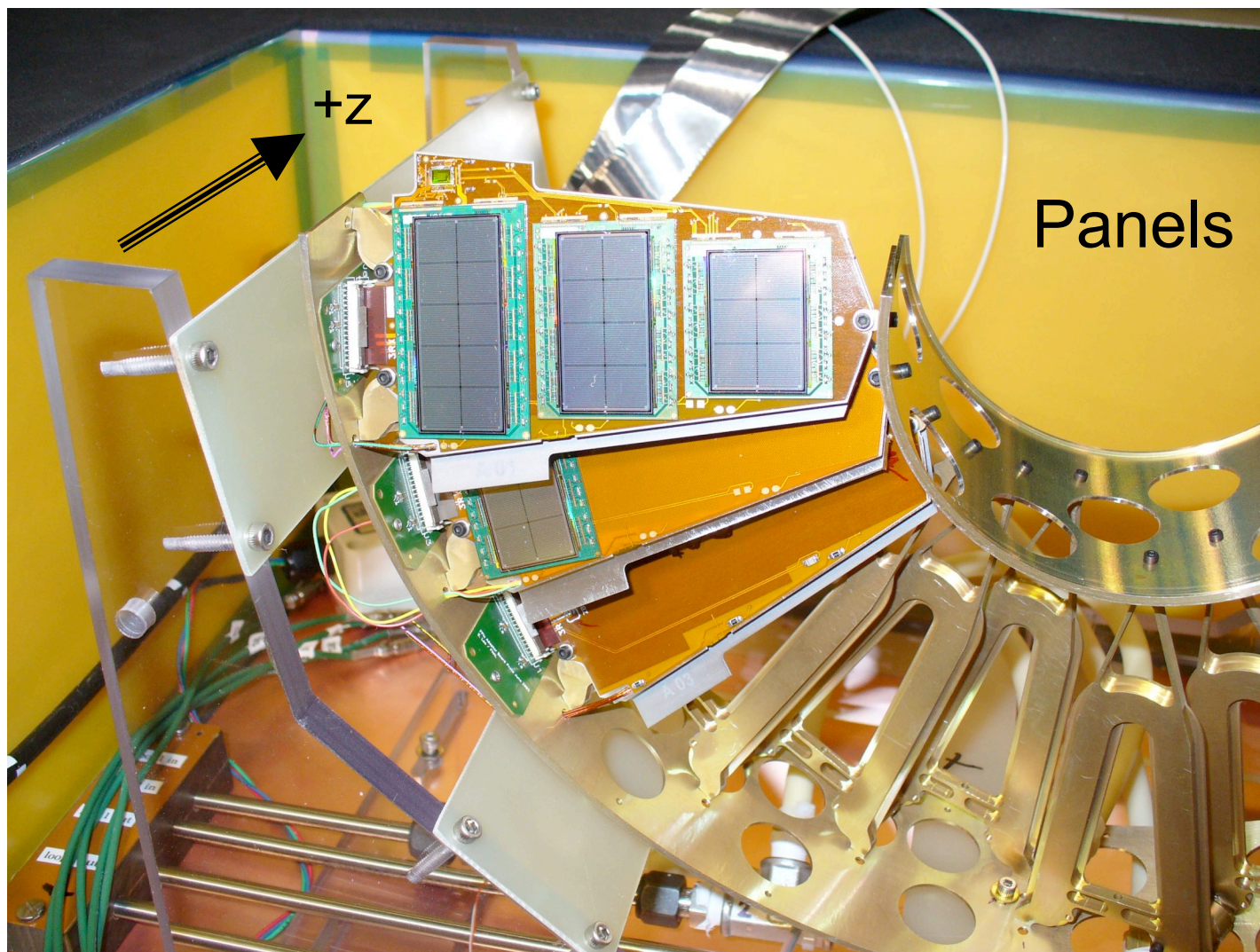
3R Panel with Mounted Plaquettes

For More information
See R. Vasquez talk
this session



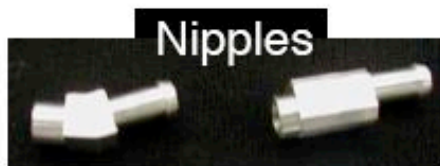


Half-Disk Assembly





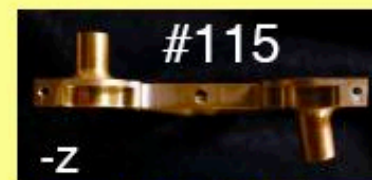
HalfDisk Parts



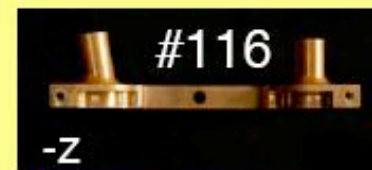
Cooling Channels
for Disks on -z



Need 8



Need 2



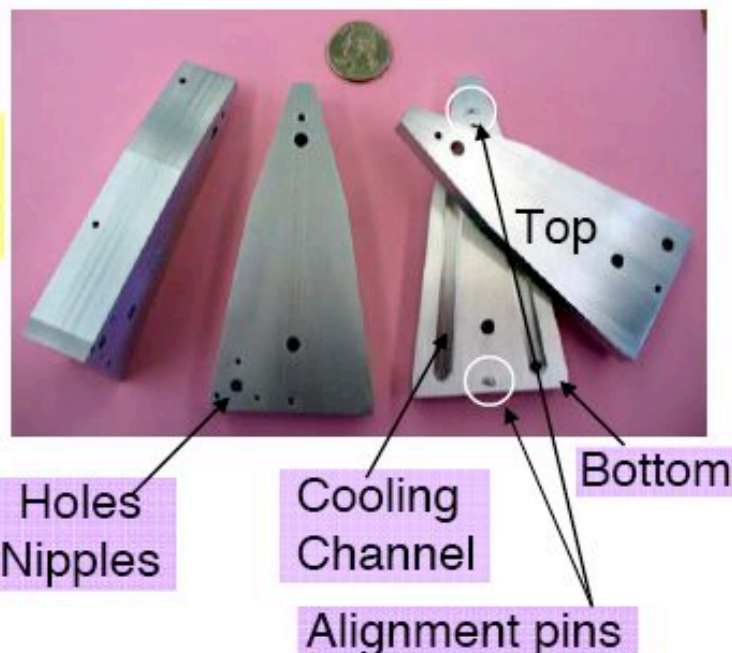
Need 2



Cooling Channels (12 per Half Disk)

Three step assembly :

1) Machine Blank Al Parts: Top and Bottom



2) Al Braze Parts



3) Machine Parts to Final Size



~2 parts/day

86 Production Blanks in Hand



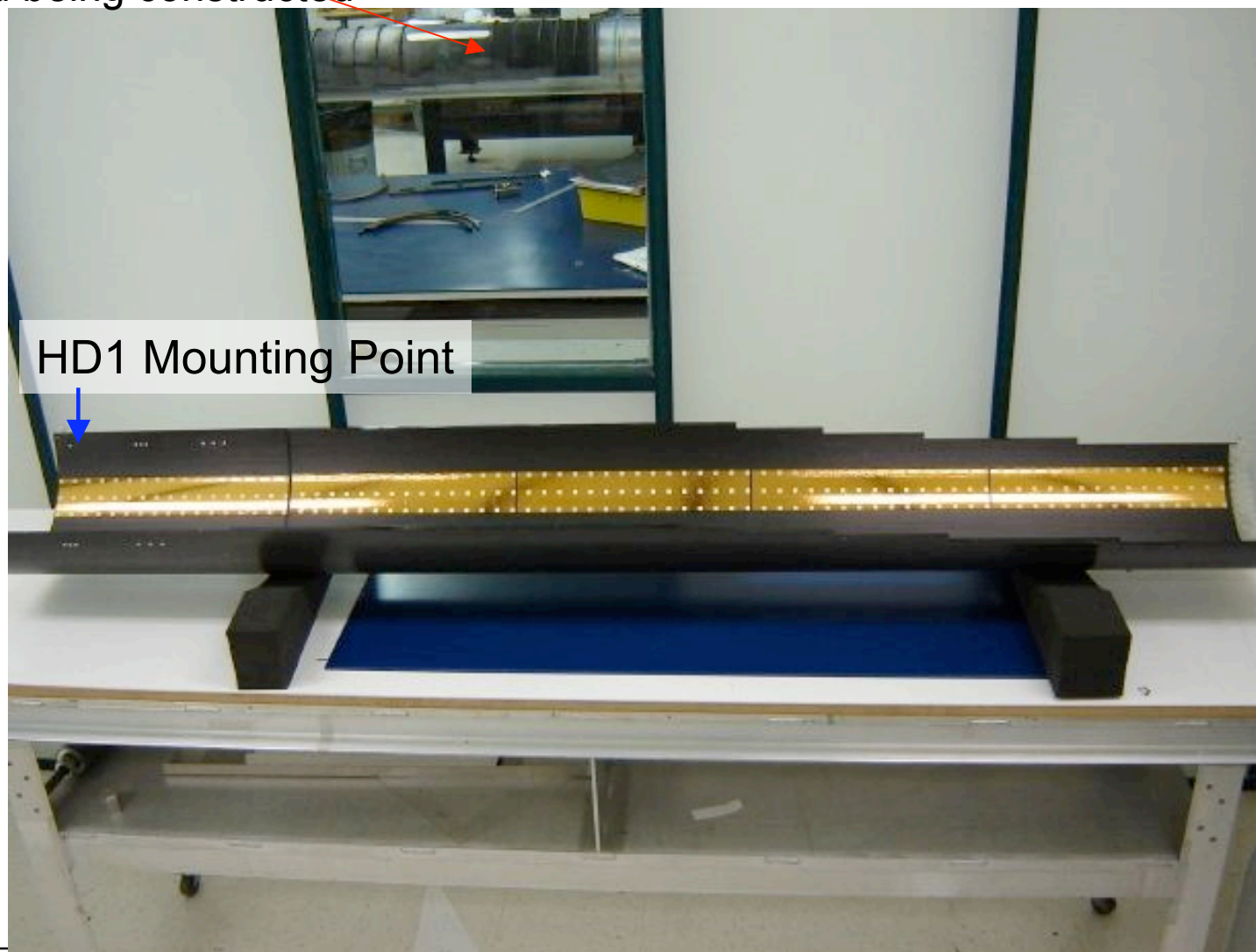
Half-Disk Assembly Steps

- Brazed blanks have been leaked checked at vendor site
- Rechecked for leaks after machining to shape
- Assembled into Half-Disk and joints are re-checked for leaks.
- Fiducial balls attached
- Panels are mounted
 - one cooling loop at a time
 - Panel Functionality is made (cooling is necessary at this stage)
 - Panels mounted on 2nd cooling loop, and Full Half-Disk is tested for functionality.
- Half-Disk is ready for mounting in 1/2 service cylinder.
- Time scale is determined (eventually) by panel production (2/day), = 2.5 calendar weeks



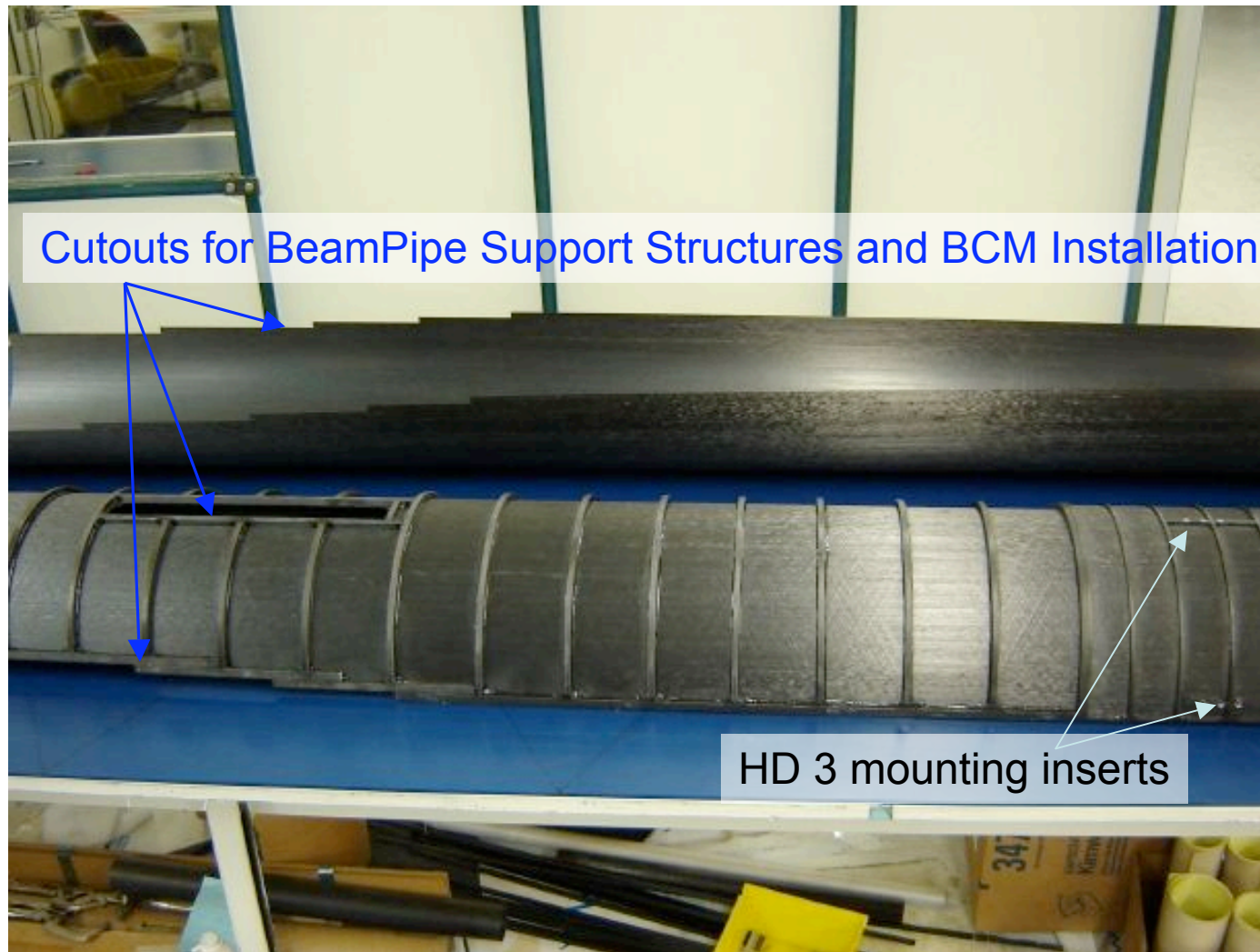
First Production Half Service Cylinder (for 2007 Pilot Run)

2nd being constructed





First Production Half Service Cylinder Internal Construction (for 2007 Pilot Run)

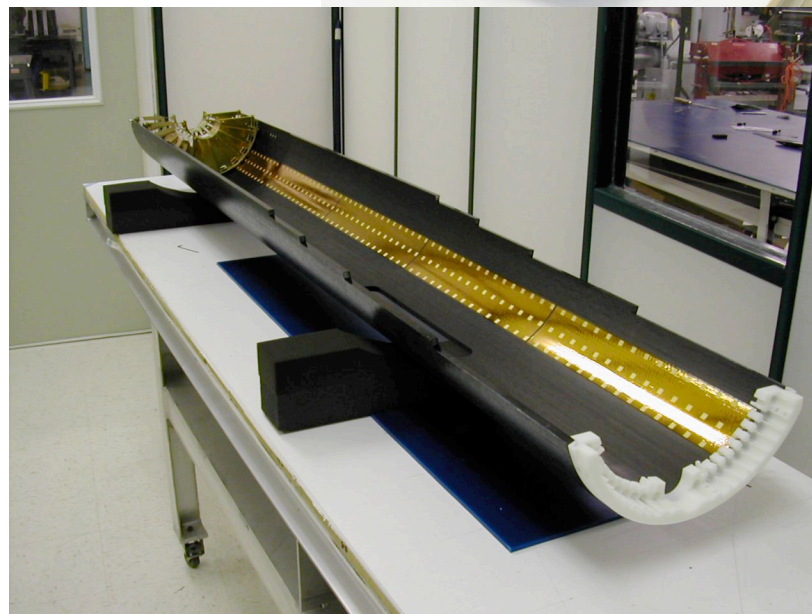
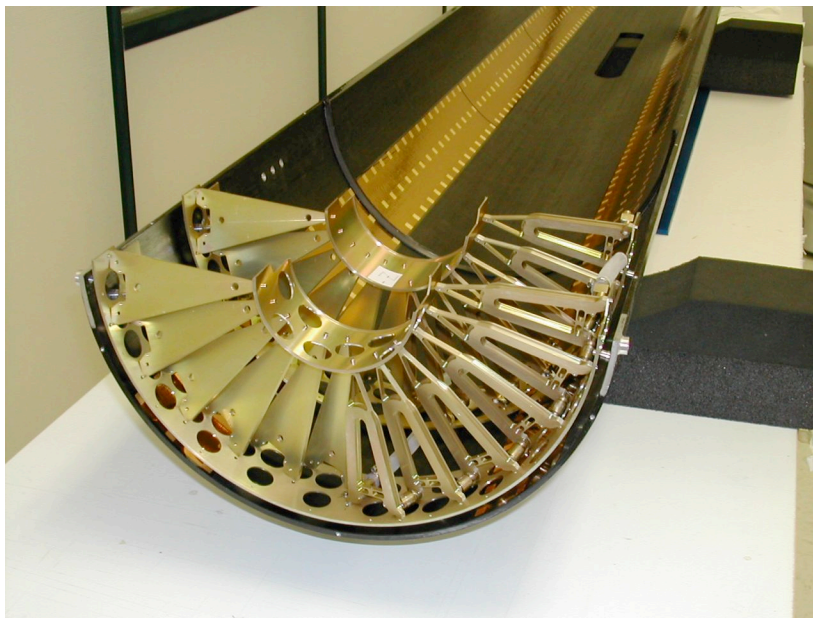


IP ->



2007 Pilot Run Half Disks in 1/2 Service Cylinder

- Pilot Run Panels are ready
 - Mounting onto 1/2 disks next week
- Plan for Pilot run Detector to be completed end of October 06 and shipped to TIF





Final Detector Assembly

- Final detector in Lab C at SiDET.
 - Mount all support electronics, cabling, cooling lines, leak check.
 - Mount two Half Disks into 1/2 Service Cylinder #1
 - ~early December 06
 - Commissioning @ SiDET
 - First full functionality check with complete final electronics
 - Shipping to CERN (TIF) ~Jan 07
 - Will ship remaining three 1/2 service cylinders @ one every 2 months
 - Recommission @TIF



Summary

- All Production steps thru Panel Testing have begun and produced parts.
 - Issues with bump bonding have been identified and manufacturer alerted to problem.
- Pilot 2007 Detector Panel Mounting on Half-Disks has begun
- Expect production panel mounting onto HD late October
- First Half-Disk assembly with panels Nov 06
 - Roughly produce one Half-Disk/month (8 total)
- First Production Complete 1/2 Service Cylinder shipped to TIF in Jan 07.